Mycobacterium Abscessus in Lung Transplantation: Proceed with Caution

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A 25-year old male patient with cystic fibrosis has developed progressive disease and his medical team is considering referral for lung transplantation. The patient has a history of pancreatic insufficiency and well controlled diabetes. He has been infected with Pseudomonas aeruginosa and Methicillin Sensitive Staphylococcus aureus. Some of his recent mycobacterial cultures have had low growth of Mycobacterium abscessus. Is this an appropriate candidate for lung transplantation?

In recent years there has been an increase in atypical mycobacterial infections in patients with advanced lung disease, especially in patients with cystic fibrosis and bronchiectasis.1,2 In particular, Mycobacterium abscessus has been isolated with increasing frequency from patients. M. abscessus is inherently resistant to many antibiotics and has a propensity to lead to respiratory and wound infections. Treatment with multiple antibiotics, including but not limited to amikacin, imipenem, cefoxitin, macrolides, quinolones, doxycycline, linezolid and tigecycline, is frequently required.2 Toxicities are quite significant. Transplant programs are struggling to decide on whether patients with M. abscessus can be transplanted safely.

Studies have attempted to identify risk factors for development of mycobacterial infections after lung transplantation. The only one that was found was the presence of M. abscessus prior to lung transplantation.3 Regardless, the incidence of M. abscessus after lung transplant remains quite low. Non-tuberculous mycobacteria are isolated from 3% to 15% of patients undergoing lung transplantation, depending on the population transplanted. M. abscessus is the second most common species isolated (ranging from 10% to 16% of isolates); however it required treatment in most cases reported.3

There are multiple case reports, an international questionnaire and a few case series that attempt to assess outcomes after lung transplantation in patients with post-transplant M. abscessus infection.3,7 Despite the many reports with very poor outcomes (from pulmonary, wound or disseminated infections), it appears the majority of patients with M. abscessus survive their infections. However, mortality appears to be high and based on a summation of the case reports as many as 30-35% of patients with M. abscessus die.3,7 Anecdotal information from our center suggests similar outcomes. Many patients had transient colonization and needed no treatment. Other patients had treatable, but relapsing disease. Others died with an active infection, but some of them did not die from M. abscessus. Other comorbidities led to death.

A couple of other interesting case reports show that aggressive treatment before and after lung transplantation
might lead to better outcomes and that transmission from person to person during clinic visits is possible.

So how is the clinician to go forward? It is difficult to make firm conclusions, but based on all the evidence, careful screening of patients before transplant and if isolated, after transplant is necessary. Prior to transplant, aggressive therapy should be considered for two reasons: control of the disease and decreased disease burden and ability to assess tolerance of the many medications that are needed for therapy. After transplantation, monitoring patients carefully will help identify the ones that require treatment. This is a population of transplant recipients that requires significant expertise in pulmonary, surgical and infectious disease, best done at centers with this expertise. Even though outcomes appear to be better than in lung transplant recipients with other difficult infections like *Burkholderia cepacia*, significant morbidity and mortality can be expected.

**Disclosure Statement**: Dr. Hadjiliadis is a subinvestigator of a clinical trial (Insmed) of inhaled liposomal amikacin in refractory mycobacterial infection.

**References:**